



STATE OF NEW JERSEY
Board of Public Utilities
Two Gateway Center
Newark, NJ 07102

DIVISION OF SERVICE EVALUATION

IN THE MATTER OF THE BOARD'S) ORDER
PHASE THREE REVIEW AND MONITORING)
OF THE IMPLEMENTATION OF THE)
RECOMMENDATIONS FROM THE BOARD)
ORDERED PHASE TWO REVIEW AND)
INVESTIGATION OF NEW JERSEY'S FOUR)
ELECTRIC UTILITIES)

DOCKET NO. EX99070483

(SERVICE LIST ATTACHED)

BY THE BOARD:

BACKGROUND

New Jersey, along with the rest of the Eastern seaboard, experienced an unusually intense heat wave accompanied by very high humidity over the 1999 Fourth of July weekend and thereafter. This situation placed unprecedented demands on New Jersey's four electric utilities ("utilities"), and as a consequence, New Jersey residents experienced power outages of varying durations due principally to distribution equipment failures. On July 14, 1999, the Board initiated an investigation to determine: (1) the causes of the outages; (2) communication problems in terms of notifying municipal and emergency officials and updating the information throughout the duration of the outages; and (3) remedies for any equipment problems and deficiencies in technology and systems to improve communications, outage response time and replacement of defective equipment.

The initial Board Staff investigation included public hearings and extensive discovery and led to the issuance of the Phase One Staff Report concerning the causes of the July outages and the problems arising from poor communication with consumers and local authorities during the outages. The Phase One Report, which was made public by Board Order (Docket No. EX99100763), dated April 28, 2000, also dealt with the extent of the utilities' compliance with two prior storm reports issued in 1997 and 1998.

In Phase Two of the investigation, in order to complete the technical review of the reasons for the outages, the Board retained Stone & Webster Management Consultants ("SWMC") to investigate and report on each of the New Jersey electric utilities' performance in light of the

heat-related failures experienced between July 3 and 8, 1999 and to recommend actions needed to increase reliability and reduce the risk of similar outages.

The SWMC Reports were adopted by the Board by Board Orders dated May 1, 2000 for GPU Energy ("GPUE") (Docket No. EA99070485), May 15, 2000 for Conectiv Power Delivery ("Conectiv") (Docket No. EA99070484) and May 25, 2000 for Public Service Electric & Gas Company ("PSE&G") (Docket No. EA99070486) and Rockland Electric Company ("Rockland Electric") (Docket No. EA99070487).

In these Orders, the Board required that each of the utilities take certain actions to assure that it is prepared to generally improve reliability and specifically to handle stresses on the system occasioned by peak demand periods and to improve restoration times when outages do occur. A number of these Phase Two Order provisions were considered to be critical in nature and to require further monitoring and evaluation to insure the reliability of each utility's electric distribution system. On November 28, 2000, the Board retained Schumaker & Company ("Schumaker") to assist Staff in this Phase Three project of reviewing and monitoring the implementation of the selected critical Phase Two Order provisions for the four utilities. Schumaker's Final report was submitted to the Board on March 14, 2001.

This review concentrated on these issues:

- GPUE's and Conectiv's workforce adequacy,
- The adequacy of GPUE's maintenance and inspection programs,
- GPUE's and Conectiv's outage restoration performance improvement plans (Customer Average Interruption Duration Index ("CAIDI") improvement plans),
- GPUE's and Conectiv's Supervisory Control and Data Acquisition ("SCADA") implementation,
- GPUE's lightning protection study at the Red Bank substation,
- Conectiv's system improvements for Long Beach Island, and
- Capacity/load adequacy studies at certain PSE&G and Rockland Electric Substations.

PHASE THREE REVIEW

GPUE

Workforce Adequacy

The Board, in its Order dated May 1, 2000, found that in view of GPUE's increased customer outage durations, and its past maintenance and inspection history, a study should be conducted to justify the adequacy of the current level of GPUE's workforce and should be submitted by September 15, 2000. In addition, GPUE was ordered not to proceed with any further workforce reductions until the Board is satisfied that any further reductions will not adversely impact service reliability. Interviews were to be conducted and based on such further data, the Board was to determine what further actions, including enforcement action, might be required.

Schumaker's interviews with GPUE confirmed that GPUE has implemented improved business processes in managing its workforce. Schumaker reports that the planning, scheduling and reporting processes for workforce management are what they would expect to find in an electric utility, such as GPUE, and are consistent with Schumaker's expectations of the management tools to be used in the management of utility work forces. Furthermore, Schumaker states that

GPUE's planning with respect to its workforce's diversity in terms of skill and experience levels and in-house and contractor mixes is reasonable.

Schumaker states that other electric utilities have used more contractors than GPUE has in the recent past and that the use of contractors gives the Company a greater resource pool to draw upon for storm restoration and fluctuating construction workloads. For example, GPUE has increased the number of contract linemen and substation mechanics it employs from 0 to over 200 in just over a year, in large part to accomplish an accelerated maintenance and capital improvement program in response to Board directives, in addition to expanding the availability of contractors for storm and emergency response.

The Board concurs that GPUE's planning, scheduling and reporting processes for performing appropriate actions in managing its workforce are generally identical to those of the other electric utilities in New Jersey and agrees with the consultant's opinion that contractor use gives the Company a greater resource pool to draw upon whenever situations so require.

In addition, Staff has reported that GPUE is generally meeting schedules and progressing on its capital improvement projects. However, although the Company now appears to have sufficient workforce resources, the maintenance of an appropriate level of unionized workforce with their valuable skills and experience is directly linked to the reliable and safe delivery of electric service. As the Schumaker Report notes, the skills and experience of all workers need to be developed as a buffer against the negative impact of losing such valuable skills and experience because of a significant number of retirements within a short time. In this regard, the Board CONCLUDES that GPUE should not implement any Voluntary Enhanced Retirement Program ("VERP") or any other layoff without first petitioning the Board for approval, which will be conditioned on a demonstration that any such diminution in the unionized workforce can be accomplished without impact on the development of skills and experience necessary to meet future workload requirements and to meet the necessary standard of reliability to be set by the Board.

Restoration Improvement

The Board, in its Order dated May 1, 2000, found that GPUE's CAIDI numbers for its two operating areas in New Jersey were significantly worse than national averages. This means that GPUE's New Jersey customers experienced, on the average, a longer time of electric service interruption in total when measured on a yearly basis than most of the electric consumers in the country and in the State of New Jersey. The Board ordered GPUE to develop a targeted CAIDI performance improvement program including analyses of required labor resources, information technology support and maintenance practices.

In the area of GPUE's restoration performance improvement plan, Schumaker found that GPUE complied with the Board Order regarding the submission of a CAIDI performance improvement plan. Schumaker notes that many of the actions GPUE is currently doing or is planning to do should improve their CAIDI numbers. Thus, GPUE has completed installation of an Outage Management System ("OMS"), which will help the Company to more rapidly discern the cause and scope of an outage, dispatch crews and aid communications. All of these factors will help diminish GPUE's CAIDI numbers.

With regard to broader reliability issues, GPUE is attempting to improve its CAIDI/reliability performance by way of its three-year reliability improvement work plan, which the Company initiated in year 2000 and will continue through year 2002. Under this plan, the Company is currently initiating and completing numerous projects involving improvements of substations, distribution circuits, underground networks, technology and maintenance of equipment. In order

to accomplish this plan, the Company has accelerated its construction-spending budget by approximately \$56 million over this three-year period. Included in the Company's efforts are:

- Working to improve Labor/Management relations with an emphasis on communications,
- Developing alliances with external contractors,
- Restructuring the GPU Energy organization so that more decisions are made at a local level,
- Implementing 24 hours per day, 7 days a week Troubleshooter coverage,
- Increasing the Initial Troubleshooter staffing levels by 25%,
- Increasing the number of field supervisors, and
- Establishing the Community Connections program.

However, certain areas of GPUE's service territory continue to experience inordinate service disruptions during and after storms. These outages have caused verbal and written complaints to be filed with the Board by municipalities and groups of private citizens. In order to address these concerns, at Staff's request, GPUE described in detail its efforts to address these issues by a way of the Community Outreach Program where GPUE technical representatives have been visiting the frequently affected towns and explaining to the town representatives the steps the Company is taking to improve the reliability of the service in those towns. GPUE has also submitted to Board Staff the specific detailed work plans that the Company intends to implement to improve the reliability in several of these localities.

The Board believes that these proactive steps taken by the Company are an appropriate approach. The approach appears to include concerted efforts to recognize and then resolve persistent reliability problems. The Board DIRECTS Staff to continue to monitor the Company's prioritization and response in the affected areas and recommend other actions should the Community Outreach Program fail to satisfactorily remedy these situations.

CAIDI Reporting

Reducing outage restoration times and the adoption of restoration performance plans are cornerstones of the Board's Reliability Standards (N.J.A.C. 14:5-7). The interim reliability rules adopted in January 2001 require annual reports detailing, inter alia, the CAIDI numbers for the year. However, the continuing reports of inordinately high restoration times for some areas, and the need for assurance that CAIDI numbers are being maintained or improved for all utilities leads to the conclusion that quarterly reports of CAIDI numbers for all districts should be made by all the electric utilities so that appropriate action can be taken if a utility's CAIDI performance substantially deteriorates without reason, or in the case of GPUE, does not improve to the targeted levels. In addition, if GPUE's actual CAIDI numbers for year-end 2001 do not meet GPUE's targeted CAIDI numbers for year 2001 as found in Exhibit II-1 of Schumaker's report, then the Board ORDERS GPUE to perform a root cause analysis, as recommended in the report, to be submitted to the Board by April 1, 2002.

Inspection & Maintenance

The May 1, 2000 Board Order, in Docket No. EA99070485, required GPUE to physically inspect and review the adequacy of the Company's testing patterns for approximately 37 "critical" transformers by June 1, 2000. The remaining approximately 578 "non-critical" transformers in the GPUE system were required to be inspected and if necessary, tested by the end of 2000. This recommendation arose out of a concern with GPUE's past maintenance and inspection history as set out in the SWMC Phase Two Report.

Schumaker found that GPUE has complied with the Board Order regarding testing, inspection and maintenance on substation transformers and has adopted an aggressive schedule for complying with the Board Order. Although GPUE has not met the schedule set by the Order, in Schumaker's opinion the transformer maintenance program presented by GPUE is consistent with programs at other utilities and is a reasonable approach to testing the remaining transformers. Board Staff concurs that GPUE has demonstrated that it is proceeding as efficiently as possible with this testing and have taken a very conservative approach in selecting the transformers for testing. Accordingly, GPUE should proceed expeditiously in this matter subject to continued monitoring and the Board ORDERS that GPUE submit detailed monthly progress reports on the transformer inspection program.

The May 1, 2000 Board Order also dealt with various other issues, such as the depth of GPUE's Supervisory Control and Data Acquisition ("SCADA") implementation (Telemetry and Remote Control), the adequacy of lightning protection at GPUE's transmission substations and an internal audit of GPUE's maintenance and inspection programs.

With regard to GPUE's SCADA implementation, Schumaker believes that GPUE has taken a reasonable approach to developing its functional specifications for its Energy Management System ("EMS") replacement.

The lightning protection study presented by GPUE for its Red Bank substation complies with the requirements of the Phase Two Board Order according to the Schumaker report. The lightning protection plans for GPUE's other transmission substations were, by agreement, submitted prior to June 1, 2001. While Schumaker has raised some questions concerning the importance of the substation grounding system that were not addressed in the Red Bank report, GPUE has informally met with Staff prior to submission of the plans to answer questions and reported the results of its lightning protection study of the other transmission substations. GPUE has determined that 27 transmission substations will require the installation of one or more 80-foot tall lightning masts. GPUE anticipates this work will be completed by the end of this year.

Schumaker notes that GPUE has performed an internal audit of the transmission and distribution maintenance programs and practices and issued a report. Due to the recent changes in GPU Energy's organization and corresponding changes in responsibility for ongoing maintenance, the Board concurs with Schumaker's recommendations and ORDERS that the GPUE conduct periodic internal audits of its maintenance practices until the Internal Auditors are satisfied that the maintenance programs have been fully implemented. Reports of the results of such internal audits should be provided on September 30, 2001 and March 31, 2002.

Conectiv

SCADA

The Board, in its Order dated May 15, 2000, found the Conectiv needed to extend its SCADA (telemetry/control) system to other areas where there is critical load or equipment or where substations are considered key operating points. Schumaker found that Conectiv has continued to expand its SCADA coverage to provide improved operating capabilities and more accurate system planning and greater electrical visibility and control of the distribution system.

The Board concurs with Schumaker's finding that the appropriate measures were taken to expand Conectiv's SCADA system to additional critical areas and that this will assist the utility in managing load and potential load management issues.

Long Beach Island System Improvements

According to the May 15, 2000 Board Order, the customer interruptions during the July 3-8, 1999 heat wave in the Long Beach Island area were due to high peak demands, circuit failures and limitations on Conectiv's subtransmission power delivery system in that area. Conectiv was directed to submit to the Board plans, costs and schedules to initiate and complete any necessary remediation to reinforce the power delivery system serving Long Beach Island.

It is Schumaker's opinion that the system improvements described in its report for Long Beach Island will improve the system capacity and reactive power supply as required by the Phase Two Board Order. For example, Conectiv added capacitor banks, reconfigured feeders, upgraded a feeder terminal and replaced sections of a feeder with a larger conductor.

The Board concurs with Schumaker's finding that the appropriate remedies were taken to improve the electrical system on Long Beach Island. In addition, Conectiv will shortly file with the Board plans for an upgraded transmission line that will bolster the electrical system supporting Long Beach Island.

Restoration Improvement

The Board, in its order dated May 15, 2000, found that Conectiv's restoration performance had deteriorated slightly in the past couple of years, but was still better than the national average. To address this subject decline, the Board directed the Company to develop a targeted CAIDI performance improvement program including analyses of required labor resources, information technology support and maintenance practices.

Schumaker found that Conectiv has taken and will continue to take steps to address each stage of the process to reduce the time period from when it receives a call related to an outage or service interruption until the service has been restored. For example, Conectiv has added additional dispatchers to its existing workforce, nearly doubled the number of Customer Service representatives at its Call Center and will hire 15-20 employees in the overhead line, buried distribution and electric maintenance positions in New Jersey in 2001. Therefore, Schumaker concludes that Conectiv has satisfactorily addressed the Phase II Order regarding the CAIDI Improvement Plan.

The Board agrees that the above additional steps being taken by the Company should serve to reverse any declines in the Company's restoration level, and notes that CAIDI numbers will be monitored in accordance with our prior recommendation set out in the May 15, 2000 Order.

Workforce

The Board Order, dated May 15, 2000, found that, in view of the increased average customer outage duration, the relative youth of Conectiv's new organizational structure, the previous downsizing of Conectiv's workforce, the ratio of customers to employees and the critical growth areas in New Jersey served by Conectiv, a detailed study of the adequacy of Conectiv's workforce should be prepared and submitted to the Board.

With regard to work force adequacy, Schumaker concludes that, upon review of the documentation and the conduct of on-site interviews, Conectiv has developed a reasonable planning process for assuring the adequacy of its workforce in the transmission and distribution areas of its Atlantic Region (New Jersey).

The Board notes that Conectiv's plan is replete with details, which include specific work plans by year, by category (capital projects, preventive maintenance, corrective maintenance, etc.), the amount of man-hours estimated to complete each of these work plans and the available man-hours to perform the work broken down by in-house crews and contractor crews. Therefore, the Board concurs with Schumaker's findings that Conectiv has satisfactorily addressed this recommendation from the Phase Two Board Order.

PSE & G

Capacity/Load Adequacy

In its May 25, 2000 Order, the Board directed PSE&G to conduct a study to review the ratings and anticipated loads for the lines from the Bergen Switching Station, Great Notch and Totowa substations to determine if a single failure will result in an overload of the other circuits in the vicinity as occurred in July 1999. PSE&G was also directed to reevaluate the ampacity of the 4 kV cables at the Mechanic Street substation and the adequacy of the building ventilation at that substation due to the excessive heat, which was found in that substation building in July 1999.

For PSE&G, Schumaker concluded that the Company complied with the Phase II Board Order to review and evaluate the capacities and anticipated loads for the lines for the year 2000 from the Bergen Switching Station, Great Notch Substation and Totowa Substation.

It is also the opinion of the consultant that the proposed improvements in building ventilation at the Mechanic Street Substation, the addition of the 26/13 kV substation and the proposed reduction of the loads on the 4 kV feeders are sufficient to provide adequate capacity for the projected loads.

The Board agrees with Schumaker that PSE&G has identified and remediated its outstanding concerns and has fully complied with the Phase Two Order.

Rockland Electric

In its May 25, 2000 Order, the Board directed Rockland Electric to evaluate the need and timing for an upgrade to its facilities at the Cresskill Substation in light of the relay trip that occurred there in July 1999.

Schumaker concluded that Rockland Electric has complied with the Phase II Board Order to reevaluate the need for and timing of a facilities upgrade to the Cresskill Substation. Relay settings were in fact changed the day after the incident to prevent another occurrence, and the substation meets appropriate planning criteria until 2008.

The Board notes that each of the utilities has had the opportunity to review the section of Schumaker's report that addressed its company in order to raise objections to any factual errors or to raise any issues of confidentiality. None were noted. As stated, the Board has carefully reviewed the consultant's report and HEREBY ADOPTS Schumaker's report in its entirety.

Accordingly, as discussed above, the Board HEREBY ORDERS:

1. GPUE to continue to submit to the Board on a monthly basis the reports that are entitled "Update of GPUE's Report on 42 Critical Transformers", "Update to GPUE's Report on Substation Transformer Test Review" and "Update of Substation Transformer Inspections".

These submittals shall continue until all testing and any necessary remediation of the critical and non-critical transformers is completed. This work shall be completed by December 31, 2001.

2. All utilities shall report to the Board on a quarterly basis for calendar year 2001 and the first half of year 2002, beginning with the quarter ending March 31, 2001, their CAIDI number for each district in their respective operating areas and their overall New Jersey CAIDI number. In addition, if GPUE's actual CAIDI numbers for year end 2001 do not meet GPUE's targeted CAIDI numbers for year 2001 as found in Exhibit II-1 in Schumaker's report, then GPUE shall perform a root cause analysis as recommended in the report and submit it to the Board by April 1, 2002.
3. In reiterating Directive # 4 from the Board's May 1, 2000 Order in Docket No. EA99070485, that GPUE shall not proceed with any further reductions in its unionized workforce until a study has been submitted to the Board, and the Board, based on the study or modifications thereto, approves the study and indicates to GPUE that it is satisfied that overall reliability performance will not be adversely impacted by the reductions.
4. GPUE to conduct periodic internal audits of its maintenance practices, as recommended by Schumaker, and to provide these reports to the Board on September 30, 2001 and March 31, 2002.

The Board emphasizes that it will, on an ongoing basis, monitor the utilities' compliance with this Order and will carefully review all of the submissions required herein. The Board shall determine if any further action is warranted, including enforcement action, in order to ensure the provision of safe, adequate and proper service going forward.

DATED: June 7, 2001

BOARD OF PUBLIC UTILITIES

BY:

CAROL J. MURPHY
ACTING PRESIDENT

FREDERICK F. BUTLER
COMMISSIONER

ATTEST:

FRANCES L. SMITH
BOARD SECRETARY